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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,319	02/24/2004	Michal OKONIEWSKI	45074.49	2318

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EXAMINER	
CRAIG, DWIN M	
ART UNIT	**PAPER NUMBER**
2123	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/708,319	OKONIEWSKI ET AL.	
	Examiner	Art Unit	
	Dwin M. Craig	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☒ Claim(s) *1,2 and 4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/13/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-5 have been presented for examination.

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. The Examiner is referring to the references listed in the specification in sections [0088] to [0103] of the specification.

2.1 As regards the listing of U.S. Patent 5,744,693 in the IDS 1449 submitted on 4/13/2004, while the reference has been considered as to the merits the Examiner is confused as to how a method of altering a plant cell that is transformed by using a nucleic acid relates to an FPGA implemented Finite-Difference Time-Domain calculation.

Clarification is requested.

Specification

3. The attempt to incorporate subject matter into this application by reference to the references listed in sections [0088] to [0103] in the specification is ineffective because none of these references are U.S. Patents or U.S. Patent Application Publications as required. See 37 CFR 1.57 (c) "..."Essential material" may be incorporated by reference, but only by way of an incorporation by reference to a U.S. patent or U.S. patent application publication..."

Claims objections

4. Claims 1, 2 and 4 are objected to because the abbreviation "FDTD" is not clearly defined, the claims should disclose at least one instance of "Finite-Difference Time-Domain" when the abbreviation is first presented.

4.1 Claim 2 is objected to because the abbreviation "PML" is not clearly defined, the claim should disclose at least on instance of "Perfectly Matched Layer" when the abbreviation is first presented.

4.2 Amendment is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 2 and 3 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 7,194,497 to Durbano.

5.1 Regarding independent claim 2, Durbano discloses, *an FDTD acceleration system for use with a host computer operating FDTD software comprising:* (Col. 4 lines 34-45 more specifically "...FDTD hardware accelerator...") *hardware circuit means for calculating FDTD and PML update equations;* (Col. 8 lines 9-19 more specifically, "...other than PML...") *means for interfacing with a host computer data bus; and* (Figures 1 & 2 and Col. 4 lines 5-29 more specifically, "...a system control unit (SCU) **201** a data dependence unit (DDU)..." see also Col. 3 lines 13-31) *means for accepting software calls from the host computer* (Col. 2 lines 30-41 more specifically "For software implementations").

5.2 Regarding claim 3, Durbano teaches, *further comprising a memory and a memory manager for temporarily storing data for use by the hardware circuit means* (Figure 2 item # 213 and the descriptive text).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 7,194,497 to Durbano in view of U.S. Patent 6,449,708 to Dewhurst.

6.1 Regarding independent claims 1 and 4 and using independent claim 1 as an example, Durbano teaches, *an FDTD acceleration system for use with a host computer operating FDTD software,* (Col. 4 lines 34-45 more specifically "...FDTD hardware accelerator...") *comprising: means for interfacing with a host computer data bus;* (Figures 1 & 2 and Col. 4 lines 5-29 more specifically, "...a system control unit (SCU) **201** a data dependence unit (DDU)..." see also Col. 3 lines 13-31) *and means for accepting software calls from the host computer* (Col. 2 lines 30-41 more specifically "For software implementations").

However, *Durbano* does not expressly disclose, *a circuit comprising a plurality of one-dimensional bit-serial FDTD cells.*

Dewhurst teaches *a circuit comprising a plurality of one-dimensional bit-serial cells*

(Figure 1 and Col. 4 lines 62-67 more specifically "...provides bi-directional bit serial and control signal connections").

Durbano and *Dewhurst* are analogous art because they are both from the same problem solving area of Field Programmable Field Arrays for performing computations.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have used the FDTD acceleration methods of Durbano in combination with the bit serial methods of Dewhurst because of the need in the art for a programmable processor to emulate linear and non-linear functions (see Col. 2 lines 14-44 Dewhurst).

Therefore, it would have been obvious to combine Dewhurst with Durbano to obtain the invention as specified in claims 1, 4 and 5.

6.2 Regarding claim 5, Durbano teaches *the further step of temporarily storing updated equation data in a memory operatively connected to the hardware circuit* (Figure 2 item # 213 and the descriptive text).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The IEEE paper entitled, "Finite-difference time-domain method in custom hardware?" by the inventors has been included in this office action.

7.1 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwin M. Craig whose telephone number is (571) 272-3710. The examiner can normally be reached on 10:00 - 6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul L. Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dwin McTaggart Craig

3/30/07

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